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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

EDWARDS, LAURA ESTELLE

ART UNIT

PAPER NUMBER

1734

DATE MAILED: 09/05/2003

9

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/937,160

Applicant(s)

PARNI ET AL.

Examiner

Laura Edwards

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-- Th MAILING DATE of this communication app ars on the cover she t with th correspond nce address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10-65 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10-65 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. The indicated allowability of claims 14-21 is withdrawn in view of newly discovered references. Rejections based on the newly cited reference(s) follow.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claim 10 is rejected under 35 U.S.C. 102(b) as being anticipated by Kashiwabara et al (US 5,820,935). Kashiwabara et al discloses rod doctor (roller 2) in a support frame with a cradle (support member 11) wherein the support member surface is covered with a coating which provides wear resistance and sliding friction properties (col. 2, lines 16-31, col. 8, lines 18-43 & figure 1).

6. Claims 11, 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kashiwabara et al (US 5,820,935) as applied to claim 10 above and further in view of Montgomery et al (US 2,695,004) and Sendzimir (US 3,602,556). Regarding claim 11, Kashiwabara et al suggests a stainless steel bar as the rod doctor (col. 8, lines 15-17) but does not disclose a coating on the bar. However, it is well known and conventional in the art to coat rod doctors with a coating such as chromium for wear and corrosion resistance as shown for example by Montgomery et al (col. 3, lines 20-29). It would have been obvious at the time the invention was made to coat the rod in Kashiwabara et al with chromium to improve wear as is known in the art and shown for example by Montgomery et al. It is noted the chromium coating would also improve sliding properties as suggested by Sendzimir (col. 3, lines 36-43).

Regarding claims 22 and 23, Kashiwabara et al teaches the use of a support coating material having a small frictional resistance such as Teflon™ (col. 8, lines 18-

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43) but does not specifically disclose chromium. One in the art reading Kashiwabara et al's disclosure would appreciate other materials having small frictional resistance may be used as functionally equivalent alternatives to Teflon™; Sendzimir, for example, suggests chromium as an equivalent to Teflon™ in wear or bearing surfaces (col. 3, lines 36-43). It would have been obvious at the time the invention was made to use any functionally equivalent material known in the art, for example chromium as suggested by Sendzimir, for the small friction resistance coating in Kashiwabara et al.

7. Claims 12, 13, 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kashiwabara et al (US 5,820,935) in view of Montgomery et al (US 2,695,004), Sendzimir (US 3,602,556) and Warner (US 2,729,192). Kashiwabara et al, Montgomery et al and Sendzimir are applied as in the rejections of claims 10, 11, 22 and 23 above but are silent as to the thickness of the chromium layer. However, one in the art would readily determine the appropriate thickness – Warner, for example, suggests a layer of about 0.002 inches (50.8 micrometers) is appropriate for use in paper applications (col. 4, lines 61-69). It would have been obvious at the time the invention was made to provide 0.002 inch chromium layers in Kashiwabara et al as modified to provide wear resistance for a satisfactory time period as suggested by Warner.

8. Claims 11-13 and 22-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kashiwabara et al (US 5,820,935) as applied to claim 10 above and

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further in view of Montgomery et al (US 2,695,004) and Strange et al (US 4,094,749). Kashiwabara et al suggests a stainless steel bar as the rod doctor (col. 8, lines 15-17) but does not disclose a coating on the bar. Kashiwabara et al also teaches the use of low friction materials for the support surface including impregnating Teflon™ into the surface of a metal (col. 8, lines 38-42) but does not specifically disclose combining Teflon™ with chromium.

It is well known and conventional in the art to coat rod doctors with a coating such as chromium for wear and corrosion resistance as shown for example by Montgomery et al (col. 3, lines 20-29). Strange et al teaches enhancing the low friction and wear characteristics of hard chromium coatings by fusing Teflon™ in fissures of the chromium surface (col. 1, lines 13-14, col. 2, lines 8-9 & 53-68, col. 3, lines 35-37). One viewing this disclosure would appreciate Strange et al's coating is usable for coating the doctor rod as shown by Montgomery et al and also for the low friction material desired by Kashiwabara et al. It would have been obvious at the time the invention was made to use the hard chromium coating taught by Strange et al for both the rod and the support surface in Kashiwabara et al in order to take advantage of the coating's enhanced wear and low friction properties.

Regarding claims 11-13, Strange et al suggests coatings in the thickness claimed.

9. Claims 11, 26-27, 40-41 and 52-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kashiwabara et al (US 5,820,935) as applied to claim 10 above and

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further in view of Montgomery et al (US 2,695,004) and Nalband (US 3,942,230).

Kashiwabara et al suggests a stainless steel bar as the rod doctor (col. 8, lines 15-17) but does not disclose a coating on the bar. Kashiwabara et al also teaches the use of low friction materials for the support surface including impregnating Teflon™ into the surface of a metal (col. 8, lines 38-42) but does not specifically disclose combining Teflon™ with chromium.

It is well known and conventional in the art to coat rod doctors with a coating such as chromium for wear and corrosion resistance as shown for example by Montgomery et al (col. 3, lines 20-29). Nalband discloses a method of producing high abrasion resistance in chromium-plated rolls with release (low friction) surfaces by coating/impregnating with Teflon™ (col. 1, line 6 to col. 2, line 18). It would have been obvious at the time the invention was made to use the chromium and Teflon coating taught by Nalbad for both the rod and the support surface in Kashiwabara et al in order to take advantage of the coating's high abrasion and low friction properties.

Regarding claims 40-41, Nalbad discloses a flame or plasma spray for depositing the porous coating (col. 1, lines 33-35); however, one in the art would appreciate any other conventional deposition method is usable for applying the metal including vacuum deposition processes such as sputtering.

Regarding claims 52-53, as noted above, Nalbad suggests using plasma spray.

10. Claims 11-13, 18-21, 30-33, 37, 42-45, 49 and 60-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kashiwabara et al (US 5,820,935) in view of

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Montgomery et al (US 2,695,004) and Noda et al (US 5,108,813). Kashiwabara et al suggests a stainless steel bar as the rod doctor (col. 8, lines 15-17) but does not disclose a coating on the bar. Kashiwabara et al is applied as in claim 10 above; Kashiwabara et al also teaches the use of low friction materials for the support surface (col. 8, lines 18-43) but does not specifically disclose a diamond coating.

It is well known and conventional in the art to coat rod doctors with a coating for wear resistance as shown for example by Montgomery et al (col. 3, lines 20-29). Noda et al suggests a diamond layer, which provides a low friction with high wear resistance for use in mating parts such as bearings (col. 1, lines 6-10) - a diamond layer thickness of 0.5 microns is disclosed (col. 3, lines 3-4). It would have been obvious at the time the invention was made to use any low friction, high wear material known in the art, such as the diamond layer taught by Noda et al, for both the rod and the support surface in Kashiwabara et al.

Regarding claims 30-33, 37, 42-45, 49 and 64-65, Noda et al discloses deposition of the diamond layer by any known method including thermal spraying and vacuum deposition (col. 2, line 66 to col. 3, line 2, col. 3, line 34).

11. Claims 12, 18, 30, 36, 42, 48, 60 and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kashiwabara et al (US 5,820,935) in view of Noda et al (US 5,108,813). Kashiwabara et al is applied as in claim 10 above; Kashiwabara et al teaches the use of a coating material having a small frictional resistance, such as Teflon™ (col. 8, lines 18-43), but does not specifically disclose a diamond coating. One

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in the art reading Kashiwabara et al's disclosure would appreciate other materials having small frictional resistance are usable; Noda et al, for example, suggests a diamond layer which provides a low friction with high wear resistance for use in mating parts such as bearings (col. 1, lines 6-10); a diamond layer thickness of 0.5 microns is disclosed (col. 3, lines 3-4). It would have been obvious at the time the invention was made to use any low friction, high wear material known in the art, such as the diamond layer taught by Noda et al, for the small friction resistance coating in Kashiwabara et al.

Regarding claims 30 and 42, Noda et al discloses deposition of the diamond layer by any known method including thermal spraying and vacuum deposition (col. 2, line 66 to col. 3, line 2, col. 3, line 34).

12. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kashiwabara et al (US 5,820,935) as applied to claim 10 above and further in view of Sendzimir (US 3,602,556). Kashiwabara et al teaches the use of a coating material having a small frictional resistance such as Teflon™ (col. 8, lines 18-43) but does not specifically disclose chromium. One in the art reading Kashiwabara et al's disclosure would appreciate other materials having small frictional resistance may be used as functionally equivalent alternatives to Teflon™; Sendzimir, for example, suggests chromium as an equivalent to Teflon™ in wear or bearing surfaces (col. 3, lines 36-43). It would have been obvious at the time the invention was made to use any functionally equivalent material known in the art, for example chromium as suggested by Sendzimir, for the small friction resistance coating in Kashiwabara et al.

13. Claims 10-17, 22-25, 42-47, 50, 51, 54-57 and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Warner (US 2,729,192) in view of Demo, Jr. et al (US 3,839,024) and optionally Dawes et al (US 4,596,611). Warner discloses a rod doctor in a support frame having a socket, i.e., cradle (col. 1, lines 64-66, col. 2, lines 20-36). Warner discloses the doctor rod is made of steel with a chromium coating for corrosion and wear resistance (col. 4, lines 69) but is silent as to a coating on the socket surface. Demo, Jr. et al, teaches a superior wear and corrosion resistant alloy, containing chromium, molybdenum and silicon, for application by any known procedure to two surfaces in sliding contact (col. 1, lines 6-8, col. 4, lines 17-45 & the abstract). It would have been obvious at the time the invention was made to coat both the rod and socket in Warner with the alloy disclosed by Demo, Jr. et al to obtain the superior resistance to wear and corrosion. It is noted Demo, Jr. et al teaches dimensional finishing may be needed for use. Surfaces moving relative to each other are typically finished by polishing to provide a low friction surface as suggested by Demo, Jr. et al's examples (col. 6, lines 22-23) and optionally cited Dawes et al (col. 5, lines 6-9).

Regarding claims 12, 13, 56 and 57, Warner suggests a coating thickness in the range claimed; in any event, one in the art would readily determine the appropriate thickness for a given application.

Regarding claims 42-47, 50, 51 and 59, Demo, Jr. et al's example of application by plasma spraying is a thermal spraying technique (col. 4, lines 17-21).

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14. Claims 30-35, 38, 39 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Warner (US 2,729,192), Demo, Jr. et al (US 3,839,024) and optionally Dawes et al (US 4,596,611) as applied to claims 10-15, 22, 23 and 55 above further in view of Leyendecker et al (US 5,272,014). Demo, Jr. et al discloses any known procedure may be used to apply the coating (col. 4, lines 17-18) but is silent as to a vacuum deposition technique. However, vacuum deposition is a well known and conventional process for applying wear resistant coatings as shown for example by Leyendecker et al (col. 1, lines 14-44). It would have been obvious at the time the invention was made to use a vacuum deposition process as one of the known techniques suggested in Demo, Jr. et al as such techniques are conventional in the art as shown for example by Leyendecker et al.

15. Applicant's arguments filed 6/11/03, directed to the prior art rejections have been considered but are moot in view of the new ground(s) of rejection.

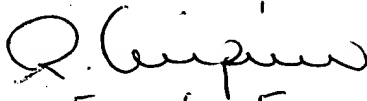
The rejections of claims 30 to 53 under 35 USC 112, second paragraph have been withdrawn in view of applicant's arguments.

16. Any communication concerning this or earlier communication from the examiner should be directed to Laura E. Edwards whose telephone number is (703) 308-4252. The examiner can normally be reached on Monday – Thursday and on alternate Fridays.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino, can be reached on (703) 308-3853.

Any inquiry of a general nature relating to this application should be directed to the receptionist whose telephone number is (703) 308-0661.


FOR L. EDWARDS

RICHARD CRISPINO
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